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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,922	12/16/2003	Di Wei	60246-223; 10,692	5821
26096	7590	11/29/2006	EXAMINER	
CARLSON, GASKEY & OLDS, P.C. 400 WEST MAPLE ROAD SUITE 350 BIRMINGHAM, MI 48009			MAYEKAR, KISHOR	
			ART UNIT	PAPER NUMBER
			1753	

DATE MAILED: 11/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/736,922

Applicant(s)

WEI ET AL.

Examiner

Kishor Mayekar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

1. Applicant's arguments, see the arguments in the Appeal Brief, filed 12 September 2006, with respect to claims 1-44 have been fully considered and are persuasive. The rejection of claims 34, 41 and 42 under the 1<sup>st</sup> paragraph of 35 US 112 and the rejection of claims 1-44 under 35 USC 103 have been withdrawn.

### *Claim Rejections - 35 USC § 112*

2. Claims 34, 41 and 42 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 34, the claim is indefinite because the variable x in the recitation  $Mn_xO_2$  is not defined.

In claim 41, the same is applied to claim 34.

In claim 42, the same is applied to claim 34.

### *Claim Rejections - 35 USC § 103*

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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4. Claims 1-19, 34 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. (US 6,368,668 B1). Kobayashi, a reference cited in previous Office action, is directed to a method and apparatus for producing a photocatalytic material. Kobayashi discloses in the section "Background Of The Invention" that "photocatalysts have been drawn attention as materials that, upon light irradiation, cause adsorption of oxygen molecules on bacteria, mold, and organic compounds, such as offensive odor components, or desorption of oxygen molecules therefrom and accelerate the decomposition (oxidation) of the organic compounds" and is useful for waste water treatment and purification of harmful gases. Kobayashi discloses the photocatalytic material being formed by coating a photocatalyst composition of a photocatalyst metal oxide on a substrate (col. 3, lines 28-67). Kobayashi also discloses in paragraph crossing cols. 5 and 6 that the photocatalyst coating composition may further comprises a metal and/or metal oxide to improve its photocatalytic activity, wherein the metal and/or metal oxide such silver, platinum, manganese, gold and oxide of silicon is supported on the surface of the photocatalyst metal oxide; and in col. 10, lines 17-30 that a multi-layered coating of the photocatalyst composition may be formed on the substrate and the multi-layered coating may formed from a plurality of different photocatalyst coating composition. As such, Kobayashi discloses that a multi-layered catalytic coating from a plurality of different photocatalyst coating compositions form on a substrate wherein the different photocatalyst coatings include all the recited coatings of a photocatalytic

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coating, and the use of the photocatalytic material in the purification of gases. The difference between Kobayashi and the above claims is the provision of the layers in the recited order. To the order of the recited layers, since there is no unexpected results from the recited ordered layers and since the specification discloses that each of the layers is used to absorb each of specific contaminants and, when one specified contaminant is adsorbed on one of the layers, each of the non-adsorbed contaminants is able to diffuse through the layer and adsorbs on the subsequent layer, Kobayashi's layered coating though general and random is equivalent to the recited sequence layers in the purification of the fluid for the adsorption of contaminants. Further, rearrangement of parts was held to have been obvious, *In re Japikse* 86 USPQ 70.

As to the subject matter of each of claims 7-12, Kobayashi discloses a light source in col. 17, lines 54-59 in the application of removing salad oil from a photocatalyst-coated substrate. To the intended use of the layered catalytic or purification system and the process limitation, it cannot be given any patentable weight in claimed apparatus. The same is applied to the intended use of the purification system as claimed in claim 16.

As to the subject matter of claim 14, since the coating layers are applied by spray, brush or sponge coating (col. 9, lines 48-55), the applied coating layers are inherently porous from such coating methods, especially when the substrate is porous such as woods.

As to the subject matter of claim 15, although Kobayashi is silent in regards to the second layer being partially transparent to UV light, however, since UV light is needed to

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activate the photocatalytic coating layers, it appears that Kobayashi's photocatalytic outer coating layer is at least partially transparent to the UV light so that the UV light can reach the inner coating layer to active it absent of evidence to the contrary.

As to the subject matter of claim 19, it would have been obvious matter of design choice since Applicant has not disclosed that having the first layer on a portion of a substrate surface and the second layer on a different portion of the substrate surface with would enhance the process or is for any particular purpose and it appears that Kobayashi's multi layers would perform equally well in the purification of fluid.

5. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi '668 in view of Reisfeld et al. (US 2003/0021720 A1). Kobayashi as applied above discloses in col. 3, lines 28-47, that the substrate is any substrates upon which a photocatalyst material is coated. The difference between Kobayashi and the instant claims is the provision that the substrate is a honeycomb. Reisfeld, another reference cited in previous Office action, shows the limitation in paragraph [0022] in a photocatalytic fluid purification system. The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified Kobayashi's teachings as shown by Reisfeld because the selection of any known equivalent substrates for the photocatalytic fluid purification would be within the level of ordinary skill in the art.

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6. Claims 7-12, 20, 33, 37, 38, 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi '668 in view of Reisfeld '720. The difference between Kobayashi as applied above and the instant claims is the provision that the system comprises the recited container, device and/or UV light source. Reisfeld shows in a photocatalytic fluid purification system the recited provision (Fig.1). Also, Reisfeld shows in paragraph [0026] that the activated catalyst oxidizes the contaminants in air into carbon dioxide and water. The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified Kobayashi's teachings as shown by Reisfeld because this would result in the application of Kobayashi's photocatalytic material to a photocatalytic fluid purification system (photocatalytic air purifier).

7. Claims 21-32 and 39-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reisfeld '720 in view of Kobayashi '668. Reisfeld, a reference applied above, discloses in a photocatalytic fluid purification system the provision of two honeycomb photocatalytic filters (12,14,16) as shown in Fig. 1, where each of the filters is coated with any suitable photocatalyst coating (paragraph [0024]). Kobayashi as applied above shows the provision of a plurality of photocatalyst compositions applied to a substrate (col. 10, lines 17-30) and a photocatalyst composition with the addition of metal and/or metal oxide to enhance the fluid purification (paragraph crossing cols 5 and 6). The subject matter as

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a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified Reisfeld's teachings as shown by Kobayashi because this would result in enhancing the photocatalytic fluid purification.

As to the subject matter of claim 27, the sequence of the recited ordered substrates, since there is no unexpected results from the recited ordered substrates and since the specification discloses that each of the substrates is used to absorb each of specific contaminants and, when one specified contaminant is adsorbed on one of the substrates, each of the non-adsorbed contaminants is able to diffuse through the substrate and adsorbs on the next substrate, Kobayashi's substrates though general and random is equivalent to the recited ordered substrates in the purification of the fluid for the adsorption of contaminants. Further, rearrangement of parts was held to have been obvious, *In re Japikse* 86 USPQ 70.

### ***Double Patenting***

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).



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A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 1-44 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-34 of copending Application No. 10/736,921. Although the conflicting claims are not identical, they are not patentably distinct from each other because the above claims are broader than the patent claims, and comprise all the limitations of the patent claims.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

#### *Response to Arguments*

10. Applicant's arguments filed in the appeal brief of 12 September 2006 have been fully considered but they are not persuasive because of the new grounds of rejection as set forth above.

Further to the argument to the rejection of claims 34, 41 and 42 under the 2<sup>nd</sup> paragraph of 35 USC 112 that the specification is not indefinite, the rejection stands because the claims are rejected as being indefinite and not the specification as argued.

To the argument that there is no suggestion in any of the references to use two substrates each having a different coating as recited in claims 21 the examiner finds this is unpersuasive. First, it's because one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Second it's because Reisfeld discloses the provision of three honeycomb photocatalytic filters (12,14,16) as shown in Fig. 1, where each of the filters may be coated with any suitable photocatalyst coating (paragraph [0024]) and Kobayashi shows the provision of a plurality of photocatalyst compositions applied to a substrate (col. 10, lines 17-30) and a photocatalyst composition with the addition of metal and/or metal oxide to enhance the photocatalytic fluid purification (paragraph crossing cols. 5 and 6), it would have been obvious to employ a different photocatalytic coating on each Reisfeld's substrate as shown by Kobayashi as this would result in enhancing the photocatalytic fluid purification.

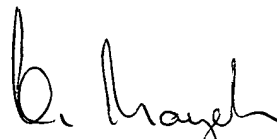
#### ***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kishor Mayekar whose telephone number is (571) 272-1339. The examiner can normally be reached on Monday-Thursday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Kishor Mayekar  
Primary Examiner  
Art Unit 1753